UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

Ref: 8P-AR

Joe Scheeler
Ash Grove Cement Company
100 Highway 518
Clancy, MT 59634-9701

Re: *BART Five Factor Analysis – Ash Grove Cement, Montana City, Montana*

Dear Mr. Scheeler:

On February 28, 2007, EPA Region 8 sent a letter to Ash Grove Cement Company (Ash Grove) that provided the results of our "subject to" modeling for Best Available Retrofit Technology (BART) and requested that Ash Grove perform a BART analysis and submit it to EPA Region 8. On June 30, 2007, Ash Grove submitted a BART analysis to EPA that was performed by Trinity Consultants. We would like to thank you for your submittal and want to recognize the effort that has gone into developing the BART analysis for Ash Grove. We would also like to recognize your choice of selective non-catalytic reduction (SNCR) as BART for NOx.

We have completed our initial review of the June 30, 2007 submittal and have determined that there is additional information and analysis needed from Ash Grove in order for us to complete our review. Following are EPA Region 8's comments. With the exception of the EPA Control Cost Manual, documents referenced in our comments have been attached for your convenience. In addition, we are providing a copy of comments on the Ash Grove BART analysis submitted to EPA on November 9, 2007 from the USDA Forest Service Northern Region.

SO_2 Emissions and Controls

- The analysis used 10 years as the basis for the remaining useful life of the scrubber, however the useful life of these control technologies is expected to be 15 years based in information from the EPA Control Cost Manual ("EPA Air Pollution Control Cost Manual", Sixth ed., EPA-452-02-001, January 2002, Section 5.2, Chapter 1, page 1-28). Ash Grove needs to reanalyze the annualized costs for the scrubber using fifteen years as provided in the EPA Control Cost Manual.
- The efficiency for the wet scrubber is estimated at 90% in the analysis. Generally, wet scrubbers can achieve an efficiency greater than 90% ("EPA Air Pollution Control Cost Manual", Sixth ed., EPA-452-02-001, January 2002, Section 5.2, Chapter 1, page 1-3). Please provide the data or analysis used to justify the 90% efficiency for the wet scrubber.

- Calculations for fuel switching in the analysis are based on reducing the coke consumption relative to the coal consumption. Another option would be to look at the reductions that can be achieved using both a low sulfur coke and a low sulfur coal. We ask that you provide an analysis of the maximum sulfur reduction that can be achieved by using both a low sulfur coke and a low sulfur coal without limiting the analysis to a 50% reduction in SO_2 if a higher reduction in SO_2 can be achieved.
- Is the 2006 average 24-hour SO_2 emission rate hourly equivalent (253.52 lb/hour) based on one year of data from the SO_2/NO_X analyzer that was installed on the kiln exhaust? Please provide an average and a range for the sulfur dioxide concentration in the kiln exhaust gas along with the exhaust gas flow rate.
- The derived costs for fuel substitution and wet scrubbing that are provided appear reasonable on a dollar per ton reduced emissions basis, but the BART Guidelines do specify that sources need to provide data supplied by a vendor to estimate costs, or sources need to evaluate costs using techniques developed in the EPA Control Cost Manual or other referenced documents. Ash Grove needs to provide documentation that verifies the costs that were used for fuel switching and wet scrubbing.
- The cost analysis assumes the wet scrubber runs 24 hrs/day for 365 days/year, (8,760 hrs/year), however, the cost effectiveness values are based on an operating year of 7,740 hrs/year. Both the cost and cost effectiveness analysis should be based on the same number of operating hours. Ash Grove should revise the analysis so the operating hours used are consistent.

NO_X Emissions and Controls

- In section 5.2.4 you eliminate the option to use mid-kiln firing of tires. The reason provided is that you foresee a lack of availability of tires because the Holcim plant is pursuing a permit to burn tires. While a permit for Holcim to burn tires at its plant in Three Forks may make burning tires cost prohibitive for Ash Grove because of lack of supply, there are other fuels that potentially could be used in mid kiln firing to achieve reductions in the 45% range (*See* Hansen, Eric R. Technical Consultant, Cadence Environmental Energy Inc. "Stated Combustion for NO_X Reduction Using High Pressure Air Injection." IEEE2002). Ash Grove should provide an analysis for other fuels that could be used in mid-kiln firing.
- With regard to the efficiency and NO_X emission reductions that can be achieved by SNCR, a recent article indicates that SNCR can reliably attain a NO_X emission rate of 800 mg/m3, and in most cases attain a rate of 500 mg/m3 (*See* Scur, P. Cemex Ostzement, Redersdorf. Hoppe, Dr. Forchunginstitut der Zementindustrie, Dusseldorf. "The Present State of NO_X Abatement with the SNCR Process." Cement International No. 2/2006, Volume 4., ISSN 1610-6199). Using data provided by Ash Grove, we have calculated the current NO_X emission concentration as approximately 1,950 mg/m3 (*See* Letter from Joseph L. Scheeler Environmental, Health and Safety Manager, Ash Grove Cement Company to Laurel Dygowski, U.S. EPA Region 8. *Request for Best Available Retrofit Technology Information Pursuant to the Regional Haze Rule.* October 12, 2006). Achieving an 800 mg/m3 concentration would be equivalent to a 60% reduction in NO_X emissions from just the SNCR. Installation of the low NO_X burner and SNCR is expected to provide an even greater reduction. Please analyze the SNCR and low NO_X burner scenario with the best reduction

achievable without limiting the analysis to a 35% reduction.

Particulate Matter (PM) Emissions and Controls

- Ash Grove did not provide any design parameters for the existing PM control technologies for the ESP on the kiln and the baghouse on the clinker cooler. It is possible that BART for PM for these two units could include additional controls and/or increased performance of the existing technologies. We ask that Ash Grove submit the design parameter information for PM controls on the kiln and clinker cooler and evaluate the possibility of additional controls and increased performance of the existing equipment.

Overall Comments

- We want to acknowledge the modeling work that was done by Ash Grove to reflect more current data and higher emission rates from the CEM rather than the stack test. The results from the modeling that Ash Grove performed using the higher emission rates from the CEM rather than the stack test are provided for Gates of the Mountains but not other Class I areas. In order for us to fully analyze the impacts from Ash Grove, we request that you submit the modeling results for other Class I areas, specifically Scapegoat and Bob Marshall.
- Your analysis did not include a conversion from a wet kiln to a semi-dry or dry kiln. Several documents in the literature indicate that both of these options would offer substantial emissions reductions at potentially reasonable costs (*See Assessment of NO_X Emissions Reduction Strategies for Cement Kilns – Ellis County – Final Report.* Prepared by ERG, Inc. for Texas Commission on Environmental Quality. TECQ Cntract No. 582-04-65589, Work Order No. 05-06. July 14, 2006 and *A Unique Approach.* Menke, T., Jepsen, O.L., and Keefe, B.P. Review No. 136. Reprint from IEEE-IAS/PSCA 2001 Cement industry Technical Conference May 2001 and published in International Cement Review, July 2001). Please include an analysis that addresses a conversion from a wet kiln to a semi-dry or dry kiln.

  There are also several locations in the document that may have typographical errors.

  - In the first footnote on page 1-1 the document states "*thus it was concluded that the contribution of the non-kiln and clinker cooler sources to visibility impairment is negligible.*" This should be revised to remove the reference to the clinker cooler, as only the non-kiln sources have a negligible contribution to impairment.
  - On page 4-2 the sulfur content of the petroleum coke is listed as approximately 4.5%. On page 4-9 in the text, the sulfur content of the petroleum coke is listed as 3%. Please revise the analysis so that the number used for the sulfur content is consistent.
  - Reference 13 on page 5-10 is incomplete. We have a document from Schreiber, Russell and Evers titled *Evaluation of Suitability of Selective Catalytic Reduction and Selective Non-Catalytic reduction for use in Portland Cement Industry.* Is this the same document? If so has it been published in a peer reviewed journal?

- Table 5-3 lists the LNB and SNCR as achieving approximately 35% control. Is this intended to be 50%? All three footnotes to table 5-3 state '*The 90 percent reduction was applied to the 2006 average…*' Are these statements accurate?

In order to move forward with the BART process, we ask that you submit the requested information and analysis to our office within thirty days from the date of this letter.

Once again, we would like to thank you for submitting the BART analysis and acknowledge the work that has gone into preparing this analysis. If you have any questions, please contact Laurel Dygowski at (303) 312-6144.

Sincerely,

Callie A. Videtich, Director
Air and Radiation Program